IDC OPINION

As IT departments struggle to tackle the challenges of staying abreast of the changing landscape of technology provision and acquisitions and keeping up with the breakneck speed at which new technologies, approaches, and business and delivery models are emerging, they need to take a holistic view of how digital data is leveraged in the value creation process.

Having the appropriate training and education will enable IT departments to be more agile and more prepared to respond to business needs.

Cloud (private, public, and hybrid), Big Data, mobility, and social networking have exponentially increased the complexity of IT. However, unless an IT organization is well trained in leveraging these four "pillars" of IT transformation, it stands to become minimized within an enterprise.

Much of the education that has gone on in the past several decades has traditionally been centered around the administration and management of specific systems. The architecture of the interdependencies across systems has largely been dealt with on an ad hoc basis.

However, to best respond, IT departments must now develop skills that can allow them to scale at the speed of business while maintaining an infrastructure and architecture that is predictable, repeatable, and reliable. Predictability and repeatability naturally lead to standardization. Thus, the industry needs to be able to gain these skills in a standardized, scalable manner.

IDC believes that EMC is a first mover in this space with its Cloud Architect certification and Data Science and Big Data Analytics certification that allow IT and business professionals to find common ground and that create a platform for synergistic collaboration.

IN THIS WHITE PAPER

In this White Paper, IDC discusses the need for IT practitioners to become certified in the use and deployment of cloud architectures and data science.
SITUATION OVERVIEW

Over the past 30 years, IT has evolved from a role that was function specific to a role that supports key decision making and value creation within an enterprise. Accordingly, IT professionals have gone from needing function-specific knowledge (such as server, network, or storage administration) to needing knowledge that traverses a number of functional areas.

At the same time, software-as-a-service (SaaS) offerings create new challenges for IT departments. SaaS providers are essentially competitors of the IT department. SaaS providers may often compromise on configurability, but their acquisition model makes the solution attractive to non-IT, line-of-business (LOB) users who can acquire these services with the swipe of a corporate credit card.

In light of these challenges, many IT departments have adopted the move to the model of IT as a service (ITaaS). This model positions the IT department almost like a third-party resource for technology operations and ultimately transitions the IT department from a cost center to a profitable service provider model. The ITaaS model also has the benefit (and necessity) of leveraging cloud services for the delivery and collection of data. Depending on the need for data privacy and control, enterprises are likely to have to deploy private and public clouds (also known as a hybrid cloud).

As the IT department transforms itself into an ITaaS provider, it will also have to transform its IT skill sets. However, with a challenge from start-up SaaS providers, new skills — in particular, business skills — need to be introduced into IT.

Perhaps one of the most appealing aspects of the SaaS model is that it is often licensed based on a business metric — such as per user, percentage of revenue, or percentage of profit. These business metrics are more easily understood by LOB leaders. To that end, IT must also transform the way it charges for its services — away from dollars per unit of CPU or cost per unit of storage capacity — to better align with the business. In essence, IT will need to sell ITaaS as simply cost per unit of IT per unit of business (either user or revenue/profit).

Additionally, with the explosive penetration of Big Data opportunities available to enterprises now, finding ways of leveraging and creating value from available data sets also drives the need for analytical skills that are founded on the application of analytics in IT.

Into the Cloud

The deep interest in Big Data and the opportunities that the technology brings to LOB leaders open up many new prospects in creating, innovating, and developing competitive advantage and strategic organizational value.

Despite these advances and opportunities, the traditional infrastructure IT community is still highly siloed around functions related to specific hardware and hardware-related categories (mainly around server, storage, network, desktop, and operating system [OS] management).
As more and more enterprises leverage virtualized infrastructures, a new skill set is emerging around the administration of virtual servers and desktops. This skill set forms the basis upon which traditional on-premise architectures can be extended into the cloud.

Unlike hardware- or application-based administration, virtual and cloud infrastructures require administrators to have a broad array of skills that traverse multiple disciplines. This new generation of IT administrators has to understand the integration, interaction, and interconnection between all hardware functions. This dramatically changes the training and background required for the next-generation IT administrator in the highly virtual world.

Traditional training and certifications have also tended to center around specific hardware or OS skill sets. This too must change and evolve such that training, education, and certification can cover the range of skills needed to succeed in the virtualized data center.

As if this challenge is not enough, the explosive interest in the capabilities of Big Data activities and solutions has highlighted a severe gap in data scientists—practitioners who are conversant with the line of business as well as the use of analytics and its application in technology.

Only a small number of data scientists are working in this capacity today. Many of them have advanced degrees in statistics and analytics. They have gained experience in industry and business and are able to translate business needs into computer code.

This lack of data scientists is proving to be a major stumbling block in the deployment, use, and implementation of Big Data projects in many organizations, but it is particularly acute for small and medium-sized businesses.

**FUTURE OUTLOOK**

Most of the leading IT vendors have developed education programs primarily around the implementation and deployment of their products. These programs enable end users to maximize their experience with the products in which they have invested. They also provide vendors with end-user “stickiness” as the time, effort, and expense that both individuals and organizations have invested can hopefully be reused as product families mature through various generations.

However, to achieve the goal of developing training that traverses multiple technologies, education providers need to be able to deliver an open curriculum that covers all aspects of server, storage, network, OS, and hypervisor management.

EMC has approached this challenge by developing the Cloud Architect training and certification. The company emphasizes the “open” nature of the curriculum. That is, while it uses examples based on products and solutions that it markets, the actual content of the training is transferable across vendors.
EMC addresses these needs by providing Cloud Infrastructure and Services (CIS) Associate (foundational level), Cloud Architect - Cloud Infrastructure and Services (specialist level), and Cloud Architect - IT-as-a-Service Planning and Design (expert level) training and certification offerings.

To provide domain-specific expertise to complement, expand, and complete highly virtualized cloud infrastructure designs, EMC also offers "open" curriculum and certification for Data Center Architects in four domain specialties: Storage Networking, Information Availability, Information Storage Security, and Storage Service Management.

The EMC cloud curriculum is intended for:

- IT professionals deploying and managing physical and/or virtualized servers, networks, storage, databases, and applications
- IT architects whose planning and design responsibilities are rapidly expanding to include virtualization and cloud computing considerations
- Any technical professional or college student planning to pursue a career in the emerging field of cloud computing

The course and EMCCIS certification exam topics include:

- Business drivers and characteristics of cloud
- Cloud deployment, service models, benefits, and challenges
- Virtualize server, storage, network, desktop, and application
- Business continuity in a virtualized environment
- Cloud infrastructure, services creation and management
- Cloud security concerns, solutions, and best practices
- Best practices for migration to the cloud

With respect to Big Data, EMC is the first vendor to provide a certification around data science. In response to the industry’s need to educate and train many more data scientists, EMC offers the new EMC Proven Professional Data Science and Big Data Analytics certification, which provides instruction on:

- Big Data clusters based on Apache Hadoop
- Statistical and analytical skills and how these skills can be instantiated through computer code
- Financial and business knowledge
The combination of these skills can provide IT and business professionals with the necessary knowledge to recognize, deploy, and implement Big Data activities that can result in significant strategic organizational value creation.

EMC addresses these needs by providing the Data Science and Big Data Analytics course. According to EMC, this course is intended for:

- Business and data analysts looking to add Big Data analytic skills
- Managers of business intelligence, analytics, or Big Data groups
- Database professionals looking to enrich their analytic skills
- College graduates considering data science as a career field

The course provides a hands-on practitioner's approach to the techniques and tools required for analyzing Big Data. The course is designed to enable students to:

- Become immediate contributors on a data science team
- Assist in reframing a business challenge as an analytics challenge
- Deploy a structured life-cycle approach to data analytics problems
- Apply appropriate analytic techniques and tools to analyze Big Data
- Tell a compelling story with the data to drive business action
- Use open source tools such as R, Hadoop, and Postgres

**CHALLENGES/OPPORTUNITIES**

Despite EMC's claims that the curriculum is "open," critics will no doubt comment on the company's use of EMC products and proprietary solutions in an attempt to attract prospective students to EMC. This is a fair comment, and it is further emphasized by the EMC branding. That said, IDC's analysis of the content suggests that the curriculum is not overly biased toward EMC.

Another critique of EMC is that it is primarily a storage company and that the curriculum is really about how to identify and develop a storage-focused environment. This too is a fair comment, if not for EMC's investments around Big Data and converged infrastructure solutions. EMC's majority ownership of VMware is also helping to change this perspective.

The opportunities available for EMC are quite vast, particularly around Big Data. However, there is a significant gap between the number of skilled professionals and the interest in the technologies and activities themselves.

EMC's first-mover advantage in the training and educational space can make a difference in shaping the way professionals approach, understand, and define these spaces. Providing an end-to-end curriculum that looks at the industry and market
rather than being product specific should make it attractive to enterprises, irrespective of the hardware vendor in which they have invested.

Opening up a community and an ecosystem around education will also create a leadership viewpoint in the eyes of both LOB and IT leaders.

**CONCLUSION**

The velocity of the changes in innovation and information technologies is fast outpacing the rate at which industry professionals are learning and being educated to leverage these new technologies.

Taking advantage of new technologies will enable companies to create new opportunities for competitive advantage and sustain strategic organizational value. For IT professionals, Big Data and cloud technologies represent two of the most critical ways in which infrastructure teams can provide the necessary delivery vehicles for business teams to minimize the time to value from information. Through the certifications discussed in this document, EMC has taken on an important role and responsibility in ensuring that industry professionals have a standardized and recognized approach to gaining the education necessary to benefit from the implicit opportunities in leveraging data and information.

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